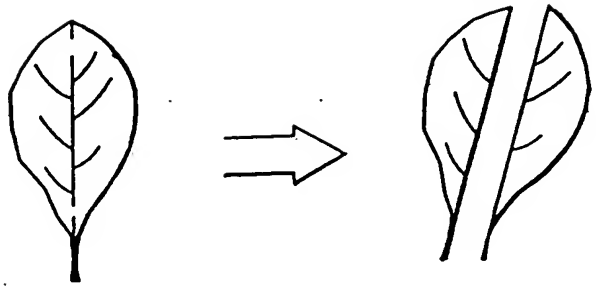
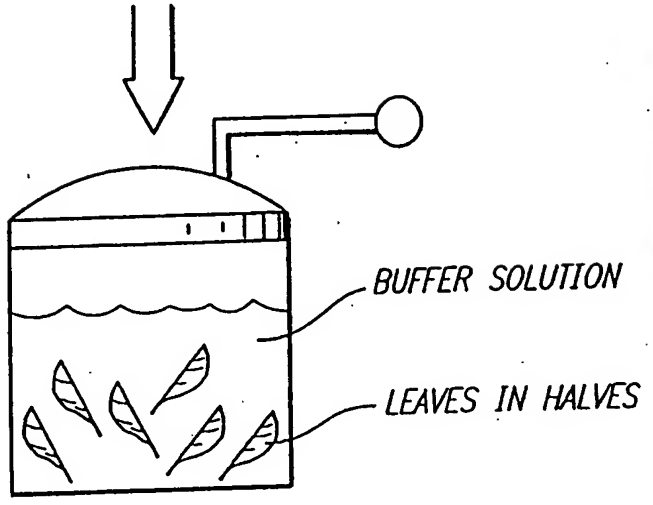
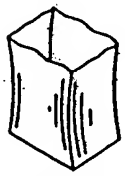


1. LEAVES ARE SPLIT

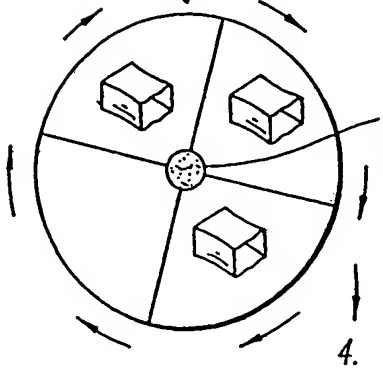


2. VACUUM CHAMBER

FIG. 1



3. BAG LEAVES

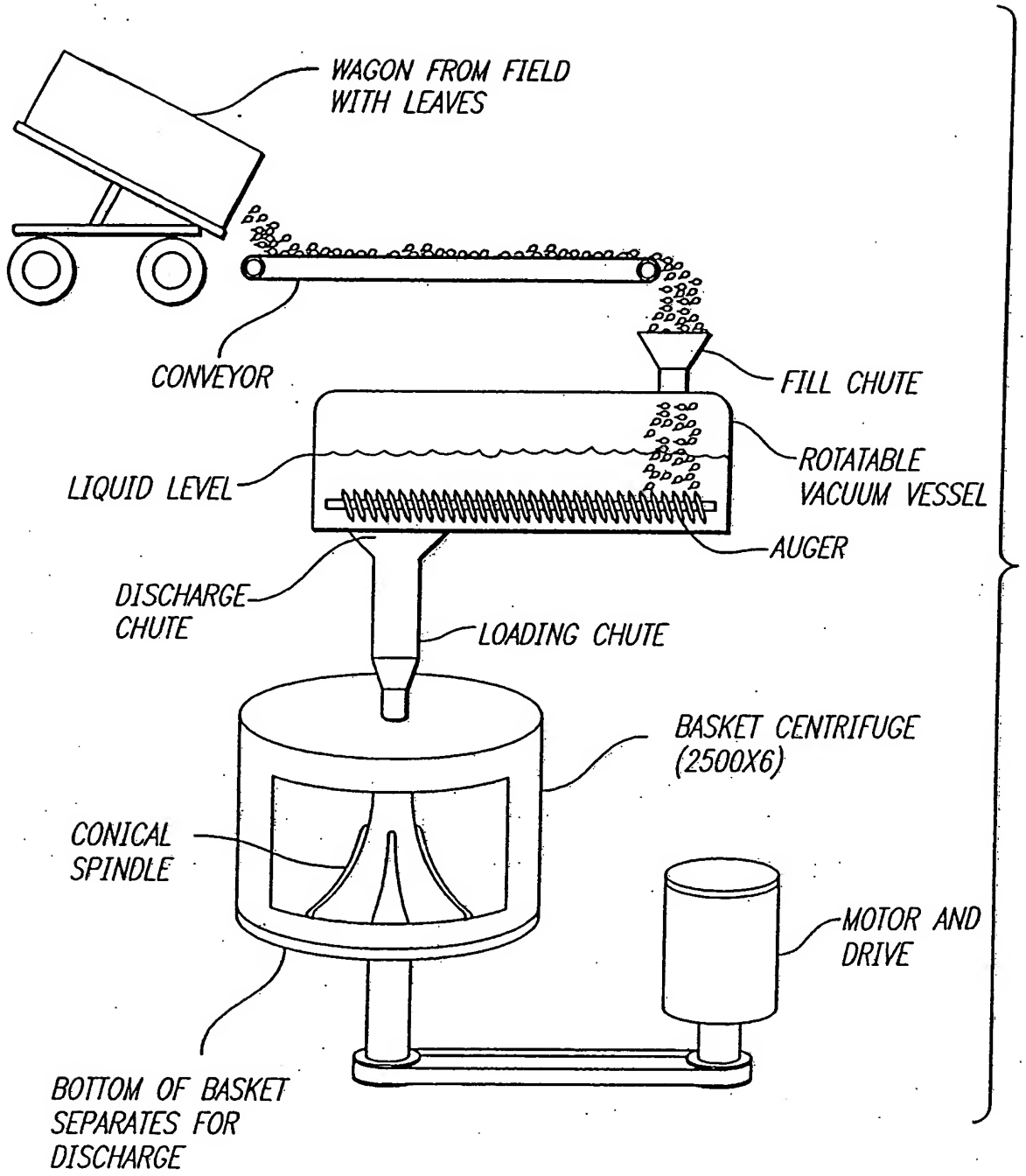


4. BAGGED LEAVES ARE REMOVED

5. INTERCELLULAR MATERIAL IS COLLECTED FOR CENTRIFUGATION

BATCH VESSEL INFILTRATION

FIG. 2



CONTINUOUS VACUUM INFILITRATION

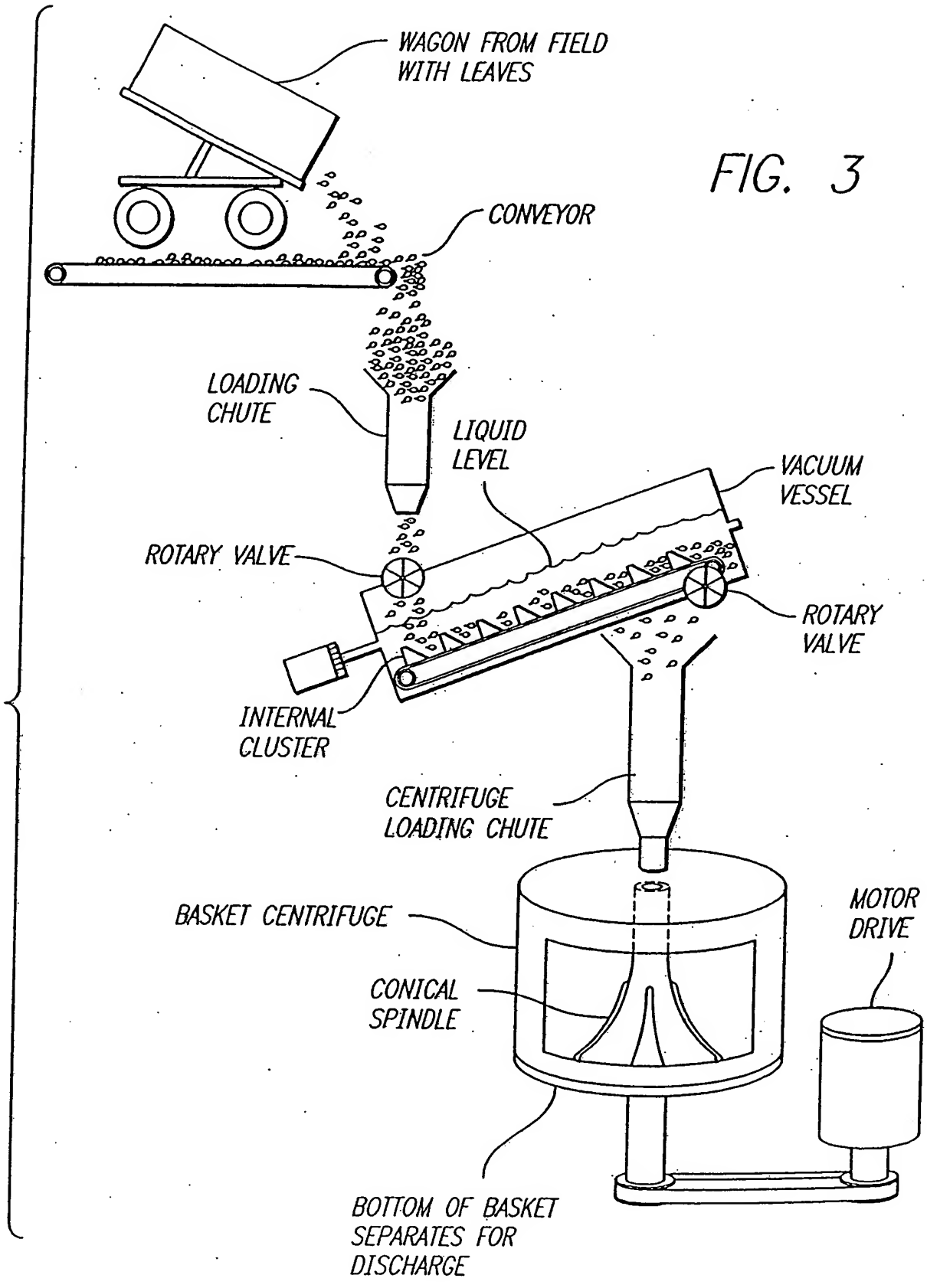


FIG. 3

FIG. 4

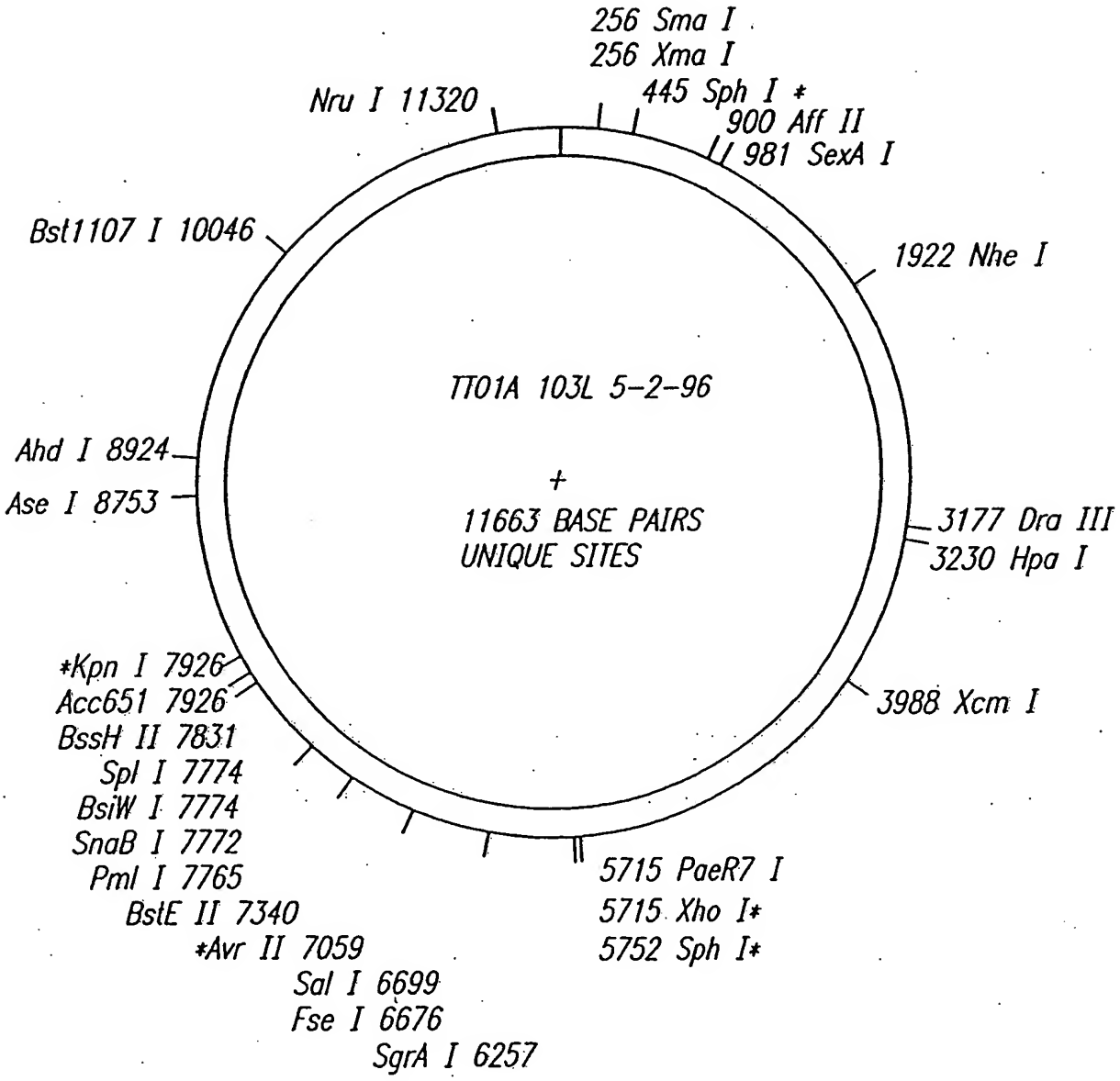

256 Sma I
256 Xma I
445 Sph I *
900 Aff II
981 SexA I
1922 Nhe I
3177 Dra III
3230 Hpa I
3988 Xcm I
5715 PaeR7 I
5715 Xho I*
5752 Sph I*
SgrA I 6257
Fse I 6676
Sal I 6699
*Avr II 7059
BstE II 7340
Pml I 7765
SnaB I 7772
BsiW I 7774
Spl I 7774
BssH II 7831
Acc651 7926
*Kpn I 7926
Ahd I 8924
Ase I 8753
Bst1107 I 10046
Nru I 11320
TT01A 103L 5-2-96
+
11663 BASE PAIRS
UNIQUE SITES

FIG. 5-A

TT01A 103L Viral cDNA

```
      |   10     |   20     |   30     |   40     |   50     |   60     |   70     |   80
    1 gtatttttac aacaattacc aacaacaaca aacaacaaac aacattacaa ttactattta caattacaAT GGCATACACA 80
   81 CAGACAGCTA CCACATCAGC TTTGCTGGAC ACTGTCCGAG GAAACAACTC CTTGGTCAAT GATCTAGCAA AGCGTCGTCT 160
  161 TTACGACACA GCGGTTGAAG AGTTTAACGC TCGTGACCGC AGGCCCAAGG TGAACTTTTC AAAAGTAATA AGCGAGGAGC 240
  241 AGACGCTTAT TGCTACCCGG GCGTATCCAG AATTCCAAAT TACATTTTAT AACACGCAAA ATGCCGTGCA TTCGCTTGCA 320
  321 GGTGGATTGC GATCTTTAGA ACTGGAATAT CTGATGATGC AAATTCCCTA CGGATCATTG ACTTATGACA TAGGCGGGAA 400
  401 TTTTGCATCG CATCTGTTCA AGGGACGAGC ATATGTACAC TGCTGCATGC CCAACCTGGA CGTTCGAGAC ATCATGCGGC 480
  481 ACGAAGGCCA GAAAGACAGT ATTGAACTAT ACCTTTCTAG GCTAGAGAGA GGGGGGAAAA CAGTCCCCAA CTTCCAAAAG 560
  561 GAAGCATTTG ACAGATACGC AGAAATTCCT GAAGACGCTG TCTGTCACAA TACTTTCCAG ACAATGCGAC ATCAGCCGAT 640
  641 GCAGCAATCA GGCAGAGTGT ATGCCATTGC GCTACACAGC ATATATGACA TACCAGCCGA TGAGTTCGGG GCGGCACTCT 720
  721 TGAGGAAAAA TGTCCATACG TGCTATGCCG CTTTCCACTT CTCTGAGAAC CTGCTTCTTG AAGATTCATA CGTCAATTTG 800
  801 GACGAAATCA ACGCGTGTTT TTCGCGCGAT GGAGACAAGT TGACCTTTTC TTTTGCATCA GAGAGTACTC TTAATTATTG 880
  881 TCATAGTTAT TCTAATATTC TTAAGTATGT GTGCAAAACT TACTTCCCGG CCTCTAATAG AGAGGTTTAC ATGAAGGAGT 960
  961 TTTTAGTCAC CAGAGTTAAT ACCTGGTTTT GTAAGTTTTC TAGAATAGAT ACTTTTCTTT TGTACAAAGG TGTGGCCCAT 1040
 1041 AAAAGTGTAG ATAGTGAGCA GTTTTATACT GCAATGGAAG ACGCATGGCA TTACAAAAAG ACTCTTGCAA TGTGCAACAG 1120
 1121 CGAGAGAATC CTCCTTGAGG ATTCATCATC AGTCAATTAC TGGTTTCCCA AAATGAGGGA TATGGTCATC GTACCATTAT 1200
 1201 TCGACATTTC TTTGGAGACT AGTAAGAGGA CGCGCAAGGA AGTCTTAGTG TCCAAGGATT TCGTGTTTAC AGTGCTTAAC 1280
 1281 CACATTCGAA CATACCAGGC GAAAGCTCTT ACATACGCAA ATGTTTTGTC CTTTGTCGAA TCGATTCGAT CGAGGGTAAT 1360
 1361 CATTAACGGT GTGACAGCGA GGTCCGAATG GGATGTGGAC AAATCTTTGT TACAATCCTT GTCCATGACG TTTTACCTGC 1440
 1441 ATACTAAGCT TGCCGTTCTA AAGGATGACT TACTGATTAG CAAGTTTAGT CTCGGTTCGA AAACGGTGTG CCAGCATGTG 1520
 1521 TGGGATGAGA TTTCGCTGGC GTTTGGGAAC GCATTTCCCT CCGTGAAAGA GAGGCTCTTG AACAGGAAAC TTATCAGAGT 1600
 1601 GGCAGGCGAC GCATTAGAGA TCAGGGTGCC TGATCTATAT GTGACCTTCC ACGACAGATT AGTGACTGAG TACAAGGCCT 1680
 1681 CTGTGGACAT GCCTGCGCTT GACATTAGGA AGAAGATGGA AGAAACGGAA GTGATGTACA ATGCACTTTC AGAGTTATCG 1760
 1761 GTGTTAAGGG AGTCTGACAA ATTCGATGTT GATGTTTTTT CCCAGATGTG CCAATCTTTG GAAGTTGACC CAATGACGGC 1840
 1841 AGCGAAGGTT ATAGTCGCGG TCATGAGCAA TGAGAGCGGT CTGACTCTCA CATTTGAACG ACCTACTGAG GCGAATGTTG 1920
 1921 CGCTAGCTTT ACAGGATCAA GAGAAGGCTT CAGAAGGTGC TTTGGTAGTT ACCTCAAGAG AAGTTGAAGA ACCGTCCATG 2000
 2001 AAGGGTTCGA TGGCCAGAGG AGAGTTACAA TTAGCTGGTC TTGCTGGAGA TCATCCGGAG TCGTCCTATT CTAAGAACGA 2080
 2081 GGAGATAGAG TCTTTAGAGC AGTTTCATAT GGCAACGGCA GATTCGTTAA TTCGTAAGCA GATGAGCTCG ATTGTGTACA 2160
 2161 CGGGTCCGAT TAAAGTTCAG CAAATGAAAA ACTTTATCGA TAGCCTGGTA GCATCACTAT CTGCTGCGGT GTCGAATCTC 2240
 2241 GTCAAGATCC TCAAAGATAC AGCTGCTATT GACCTTGAAA CCCGTCAAAA GTTTGGAGTC TTGGATGTTG CATCTAGGAA 2320
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FIG. 5-B

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2321 GTGGTTAATC AAACCAACGG CCAAGAGTCA TGCATGGGGT GTTGTTGAAA CCCACGCGAG GAAGTATCAT GTGGCGCTTT 2400
2401 TGGAATATGA TGAGCAGGGT GTGGTGACAT GCGATGATTG GAGAAGAGTA GCTGTCAGCT CTGAGTCTGT TGTTTATTCC 2480
2481 GACATGGCGA AACTCAGAAC TCTGCGCAGA CTGCTTCGAA ACGGAGAACC CGATGTCAGT AGCGCAAAGG TTGTTCTTGT 2560
2561 GGACGGAGTT CCGGGCTGTG GGAAAACCAA AGAAATTCTT TCCAGGGTTA ATTTTGATGA AGATCTAATT TTAGTACCTG 2640
2641 GGAAGCAAGC CGCGGAAATG ATCAGAAGAC GTGCGAATTC CTCAGGGATT ATTGTGGCCA CGAAGGACAA CGTTAAAACC 2720
2721 GTTGATTCTT TCATGATGAA TTTTGGGAAA AGACACAGCT GTCAGTTCAA GAGGTTATTC ATTGATGAAG GGTTGATGTT 2800
2801 GCATACTGGT TGTGTTAATT TTCTTGTGGC GATGTCATTG TGCGAAATTG CATATGTTTA CGGAGACACA CAGCAGATTC 2880
2881 CATACATCAA TAGAGTTTCA GGATTCCCGT ACCCCGCCCA TTTTGCCAAA TTGGAAGTTG ACGAGGTGGA GACACGCAGA 2960
2961 ACTACTCTCC GTTGTCCAGC CGATGTCACA CATTATCTGA ACAGGAGATA TGAGGGCTTT GTCATGAGCA CTTCTTCGGT 3040
3041 TAAAAAGTCT GTTTCGCAGG AGATGGTCGG CGGAGCCGCC GTGATCAATC CGATCTCAAA ACCCTTGCAT GGCAAGATCC 3120
3121 TGACTTTTAC CCAATCGGAT AAAGAAGCTC TGCTTTCAAG AGGGTATTCA GATGTTCACA CTGTGCATGA AGTGCAAGGC 3200
3201 GAGACATACT CTGATGTTTC ACTAGTTAGG TTAACCCCTA CACCAGTCTC CATCATTGCA GGAGACAGCC CACATGTTTT 3280
3281 GGTCGCATTG TCAAGGCACA CCTGTTCGCT CAAGTACTAC ACTGTTGTTA TGGATCCTTT AGTTAGTATC ATTAGAGATC 3360
3361 TAGAGAAACT TAGCTCGTAC TTGTTAGATA TGTATAAGGT CGATGCAGGA ACACAATAGC AATTACAGAT TGACTCGGTG 3440
3441 TTCAAAGGTT CCAATCTTTT TGTTGCAGCG CCAAAGACTG GTGATATTTC TGATATGCAG TTTTACTATG ATAAGTGTCT 3520
3521 CCCAGGCAAC AGCACCATGA TGAATAATTT TGATGCTGTT ACCATGAGGT TGACTGACAT TTCATTGAAT GTCAAAGATT 3600
3601 GCATATTGGA TATGTCTAAG TCTGTTGCTG CGCCTAAGGA TCAAATCAAA CCACTAATAC CTATGGTACG AACGGCGGCA 3680
3681 GAAATGCCAC GCCAGACTGG ACTATTGGAA AATTTAGTGG CGATGATTAA AAGGAACTTT AACGCACCCG AGTTGTCTGG 3760
3761 CATCATTGAT ATTGAAAATA CTGCATCTTT AGTTGTAGAT AAGTTTTTTG ATAGTTATTT GCTTAAAGAA AAAAGAAAAC 3840
3841 CAAATAAAAA TGTTTCTTTG TTCAGTAGAG AGTCTCTCAA TAGATGGTTA GAAAAGCAGG AACAGGTAAC AATAGGCCAG 3920
3921 CTCGCAGATT TTGATTTTGT AGATTTGCCA GCAGTTGATC AGTACAGACA CATGATTAAA GCACAACCCA AGCAAAAATT 4000
4001 GGACACTTCA ATCCAAACGG AGTACCCGGC TTTGCAGACG ATTGTGTACC ATTCAAAAAA GATCAATGCA ATATTTGGCC 4080
4081 CGTTGTTTAG TGAGCTTACT AGGCAATTAC TGGACAGTGT TGATTCGAGC AGATTTTTGT TTTTCACAAG AAAGACACCA 4160
4161 GCGCAGATTG CGGATTTCTT CGGAGATCTC GACAGTCATG TGCCGATGGA TGTCTTGGAG CTGGATATAT CAAAATACGA 4240
4241 CAAATCTCAG AATGAATTCC ACTGTGCAGT AGAATACGAG ATCTGGCGAA GATTGGGTTT TGAAGACTTC TTGGGAGAAG 4320
4321 TTTGGAAACA AGGGCATAGA AAGACCACCC TCAAGGATTA TACCGCAGGT ATAAAAACTT GCATCTGGTA TCAAAGAAAG 4400
4401 AGCGGGGACG TCACGACGTT CATTGGAAAC ACTGTGATCA TTGCTGCATG TTTGGCCTCG ATGCTTCCGA TGGAGAAAAT 4480
4481 AATCAAAGGA GCCTTTTGCG GTGACGATAG TCTGCTGTAC TTTCCAAAGG GTTGTGAGTT TCCGGATGTG CAACACTCCG 4560
4561 CGAATCTTAT GTGGAATTTT GAAGCAAAAC TGTTTAAAAA ACAGTATGGA TACTTTTGCG GAAGATATGT AATACATCAC 4640
4641 GACAGAGGAT GCATTGTGTA TTACGATCCC CTAAAGTTGA TCTCGAAACT TGGTGCTAAA CACATCAAGG ATTGGGAACA 4720
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FIG. 5-C

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4721 CTTGGAGGAG TTCAGAAGGT CTCTTTGTGA TGTTGCTGTT TCGTTGAACA ATTGTGCGTA TTACACACAG TTGGACGACG 4800
4801 CTGTATGGGA GGTTCATAAG ACCGCCCCTC CAGGTTCGTT TGTTTATAAA AGTCTGGTGA AGTATTTGTC TGATAAAGTT 4880
4881 CTTTTTAGAA GTTTGTTTAT AGATGGCTCT AGTTGTTAAA GGAAAAGTGA ATATCAATGA GTTTATCGAC CTGACAAAAA 4960
4961 TGGAGCCGAT CTTACCGTCG ATGTTTACCC CTGTAAAGAG TGTTATGTGT TCCAAAGTTG ATAAAATAAT GGTTCATGAG 5040
5041 AATGAGTCAT TGTCAGAGGT GAACCTTCTT AAAGGAGTTA AGCTTATTGA TAGTGGATAC GTCTGTTTAG CCGGTTTGGT 5120
5121 CGTCACGGGC GAGTGGAACT TGCCTGACAA TTGCAGAGGA GGTGTGAGCG TGTGTCTGGT GGACAAAAGG ATGGAAAGAG 5200
5201 CCGACGAGGC CACTCTCGGA TCTTACTACA CAGCAGCTGC AAAGAAAAGA TTTCAGTTCA AGGTCGTTCC CAATTATGCT 5280
5281 ATAACCACCC AGGACGCGAT GAAAAACGTC TGGCAAGTTT TAGTTAATAT TAGAAATGTG AAGATGTCAG CGGGTTTCTG 5360
5361 TCCGCTTTCT CTGGAGTTTG TGTCGGTGTG TATTGTTTAT AGAAATAATA TAAAATTAGG TTTGAGAGAG AAGATTACAA 5440
5441 ACGTGAGAGA CGGAGGGCCC ATGGAACTTA CAGAAGAAGT CGTTGATGAG TTCATGGAAG ATGTCCCTAT GTCGATCAGG 5520
5521 CTTGCAAAGT TTCGATCTCG AACCGGAAAA AAGAGTGATG TCCGCAAAGG GAAAAATAGT AGTAATGATC GGTCAGTGCC 5600
5601 GAACAAGAAC TATAGAAATG TTAAGGATTT TGGAGGAATG AGTTTTAAAA AGAATAATTT AATCGATGAT GATTCGGAGG 5680
5681 CTACTGTCGC CGAATCGGAT TCGTTTTAAA TACGCTCGAG ATCAATCATC CATCTCCGAA GTGTGTCTGC AGCATGCAGG 5760
5761 TGCTGAACAC CATGGTGAAC AAACACTTCT TGTCCCTTTC GGTCCTCATC GTCCTCCTTG GCCTCTCCTC CAACTTGACA 5840
5841 GCCGGGCAAG TCCTGTTTCA GGGATTCAAC TGGGAGTCGT GGAAGGAGAA TGGCGGGTGG TACAACTTCC TGATGGGCAA 5920
5921 GGTGGACGAC ATCGCCGCAG CCGGCATCAC CCACGTCTGG CTCCCTCCGC CGTCTCACTC TGTCGGAGAG CAAGGCTACA 6000
6001 TGCCTGGGCG GCTGTACGAT CTGGACGCGT CTAAGTACGG CAACGAGGCG CAGCTCAAGT CGCTGATCGA GGCGTTCCAT 6080
6081 GGCAAGGGCG TCCAGGTGAT CGCCGACATC GTCATCAACC ACCGCACGGC GGAGCACAAG GACGGCCGAG GCATCTACTG 6160
6161 CCTCTTCGAG GGCGGGACGC CCGACTCCCG CCTCGACTGG GGCCCGCACA TGATCTGCCG CGACGACCCC TACGGCGATG 6240
6241 GCACCGGCAA CCCGGACACC GGCGCCGACT TCGCCGCCGC GCCGGACATC GACCACCTCA ACAAGCGCGT CCAGCGGGAG 6320
6321 CTCATTGGCT GGCTCGACTG GCTCAAGATG GACATCGGCT TCGACGCGTG GCGCCTCGAC TTCGCCAAGG GCTACTCCGC 6400
6401 CGACATGGCA AAGATCTACA TCGACGCCAC CGAGCCGAGC TTCGCCGTGG CCGAGATATG GACGTCCATG GCGAACGGCG 6480
6481 GGGACGGCAA GCCGAACTAC GACCAGAACG CGCACCGGCA GGAGCTGGTC AACTGGGTCG ATCGTGTCGG CGGCGCCAAC 6560
6561 AGCAACGGCA CGGCGTTCGA CTTCACCACC AAGGGCATCC TCAACGTCGC CGTGGAGGGC GAGCTGTGGC GCCTCCGCGG 6640
6641 CGAGGACGGC AAGGCGCCCG GCATGATCGG GTGGTGGCCG GCCAAGGCGA CGACCTTCGT CGACAACCAC GACACCGGCT 6720
6721 CGACGCAGCA CCTGTGGCCG TTCCCCTCCG ACAAGGTCAT GCAGGGCTAC GCATACATCC TCACCCACCC CGGCAACCCA 6800
6801 TGCATCTTCT ACGACCATTT CTTCGATTGG GGTCTCAAGG AGGAGATCGA GCGCCTGGTG TCAATCAGAA ACCGGCAGGG 6880
6881 GATCCACCCG GCGAGCGAGC TGCGCATCAT GGAAGCTGAC AGCGATCTCT ACCTCGCGGA GATCGATGGC AAGGTGATCA 6960
6961 CAAAGATTGG ACCAAGATAC GACGTCGAAC ACCTCATCCC CGAAGGCTTC CAGGTCGTCG CGCACGGTGA TGGCTACGCA 7040
7041 ATCTGGGAGA AAATCTGACC taggctcgca aagtttcgaa ccaaatcctc aaaaagaggt ccgaaaaata ataataattt 7120
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FIG. 5-D

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7121 aggtaagggg cgttcaggcg gaaggcctaa accaaaaagt tttgatgaag ttgaaaaaga gtttgataat ttgattgaag 7200
7201 atgaagccga gacgtcggtc gcggattctg attcgtatta aatATGTCTT ACTCAATCAC TTCTCCATCG CAATTTGTGT 7280
7281 TTTTGTCATC TGTATGGGCT GACCCTATAG AATTGTTAAA CGTTTGTACA AATTCGTTAG GTAACCAGTT TCAAACACAG 7360
7361 CAAGCAAGAA CTACTGTTCA ACAGCAGTTC AGCGAGGTGT GGAAACCTTT CCCTCAGAGC ACCGTCAGAT TTCCTGGCGA 7440
7441 TGTTTATAAG GTGTACAGGT ACAATGCAGT TTTAGATCCT CTAATTACTG CGTTGCTGGG GGCTTTTGAT ACTAGGAATA 7520
7521 GAATAATCGA AGTAGAAAAC CAGCAGAGTC CGACAACAGC TGAAACGTTA GATGCTACCC GCAGGGTAGA CGACGCTACG 7600
7601 GTTGCAATTC GGTCTGCTAT AAATAATTTA GTTAATGAAC TAGTAAGAGG TACTGGACTG TACAATCAGA ATACTTTTGA 7680
7681 AAGTATGTCT GGGTTGGTCT GGACCTCTGC ACCTGCATCT TAAATGCATA ggtgctgaaa tataaagttt gtgtttctaa 7760
7761 aacacacgtg gtacgtacga taacgtacag tgtttttccc tggacttaaa tcgaagggta gtgtcttgga gcgcgcggag 7840
7841 taaacatata tggttcatat atgtccgtag gcacgtaaaa aaagcgaggg attcgaattc ccccggaacc cccggttggg 7920
7921 gcccaG                                                                              7926
        |  10     |  20     |  30     |  40     |  50     |  60     |  70     |  80
```